Site code[1] **SW26**

Plain near Mount Leura

Location Camperdown

Landform Level plain

Geology Quaternary-Newer volcanics (scoria)

Element Plain

Horizon	Depth (cm)	Description
A1	0–10	Black (10YR2/1); light clay; strong medium polyhedral structure; very firm consistence (dry); pH 6.7; clear boundary to:
B21	10–30	Very dark grey (7.5YR3/0); light clay; strong medium polyhedral, parting to strong fine blocky structure; firm consistence (moist); pH 7.7; gradual boundary to:
B22	30–60	Very dark grey (10YR3/1); medium clay; strong medium blocky, parting to strong fine blocky structure; very firm consistence (moist); pH 8.5; gradual boundary to:
B23	60–100	Very dark grey (10YR3/1); medium clay; strong medium blocky, parting to strong fine blocky structure; very firm consistence (moist); few (5–10%) calcareous nodules and soft segregations; pH 8.8; gradual boundary to:
B24	100–130	Very dark grey (10YR3/1); medium clay; common (20%) calcareous nodules and soft segregations; pH 8.7; abrupt boundary to:
C	130+	Volcanic ash deposits.

Humose (& Sodic), Calcic, Black Dermosol (clayey)

[1] Source: Imhof M, Brown A, Ward G (unpublished) Soils associated with dairy irrigation and winter wet soils in Southwest Victoria

Analytical data[2]

Site SW26a	Sample depth	pH		EC	NaCl	Ex Ca	Ex Mg	Ex K	Ex Na	Ex Al	Ex acidity	FC (-10kPa)	PWP (-1500kPa)	KS	FS	Z	C
Horizon	cm	H_2O	$CaCl_2$	dS/m	%	$cmol_c/kg$	$cmol_c/kg$	$cmol_c/kg$	$cmol_c/kg$	mg/kg	$cmol_c/kg$	%	%	%	%	%	%
A1	0–10	6.7	6.2	0.4	N/R	19	11	1.7	1	N/R	N/R	63	37.2	8	15	17	44
B21	10–30	7.7	7.1	0.38	0.04	19	18	4.8	2.8	N/R	N/R	64.2	39.6	3	14	32	39
B22	30–60	8.5	8	0.79	0.09	16	21	6.8	4.7	N/R	N/R	70.4	42.5	1	7	24	57
B23	60–100	8.8	8.1	0.4	0.03	13	18	6.5	2.7	N/R	N/R	60.5	38.2	1	5	22	54
B24	100–130	8.7	8.2	0.37	0.02	13	16	5.4	2.3	N/R	N/R	0	34.3	1	6	10	57

Management considerations

The upper soil profile is very well structured (parting to many fine polyhedral shaped peds), has a low bulk density and high organic matter levels in the surface horizons. The profile also has a high inherent fertility throughout (i.e. high cation exchange capacity). As a result of these attributes, the upper soil profile will provide few restrictions to water and root movement and will be very conducive to plant growth. Other favourable features include low bulk densities, high water holding capacity, moderate to good aeration porosity at field capacity, and good hydraulic conductivity – all features conducive to plant growth.

The surface soil is plastic and likely to deform readily, even at low moisture contents. Over-cultivation, trafficking and stocking should be avoided – especially if the soil is wetter than the plastic limit – otherwise structural damage (e.g. compaction, pugging) can easily occur.

The high wilting point value (i.e. 37%) indicates that plants will be unable to utilise light rains when the soil is relatively dry. The soil profile, however, will have a reasonably high plant available water capacity.

The deeper subsoil (from 30 cm depth) is mainly strongly alkaline. Alkaline subsoils are associated with a high nutrient capacity but result in an imbalance in nutrient availability (may be restrictive to certain plant species (e.g. potatoes). Growing more alkaline tolerant species is a practical option. Calcium carbonate nodules (segregations, soft and hard) are associated with alkaline soils. This secondary lime is often found in deep subsoils of many basalt-derived soils. As well as growing tolerant species, some micronutrients may be required to bolster essential macronutrients for more adequate plant growth (eg. zinc).
These soils tend to have moderate linear shrinkage and high plasticity and therefore do not appear to be ideal soils for mole drainage as they may have a limited lifespan.
The level of soluble salts becomes medium from 30 cm depth – which may restrict the growth of salt-sensitive species. Levels of soluble salts in the surface horizons may also affect extremely salt-sensitive species.
The subsoil is sodic and moderate to strong dispersion occurs in the deeper subsoil. This indicates that hydraulic conductivity will be slow and will result in restricted water movement at depth.

[2] Source: Government of Victoria State Chemistry Laboratory.